HELMINTHOLOGICAL NOTES.

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OPHIOTÆNIA LONGMANI, n. sp.

(Text-figures 1-18.)

Somewhat macerated individuals of this new species of tapeworm were taken by Mr. H. A. Longman, of the Queensland Museum, from a preserved specimen of *Aspidiotes ramsayi*, a python captured at Yeulba in Western Queensland. In addition to the cestode, the intestine was found to contain a large species of *Ascaris*, while the lungs were parasitised by a few specimens of *Porocephalus*.

The longest of the tapeworms measures 94 mm. and possesses a maximum breadth of almost one millimetre. The scolex has a width of about ·8 mm. and is nearly square in section, its dorsoventral diameter being about ·65 mm. It is well marked off from the rest of the strobila. Its broadest part is situated

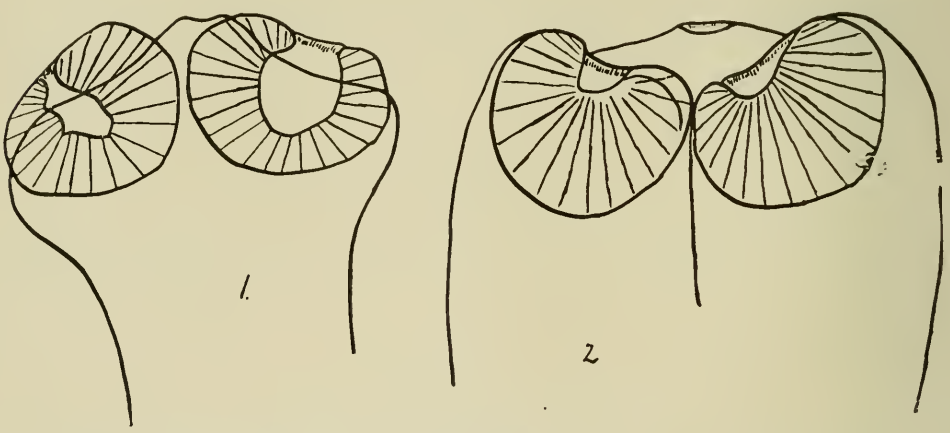


Fig. 1.—View of scolex of *Ophiotænia longmani*.

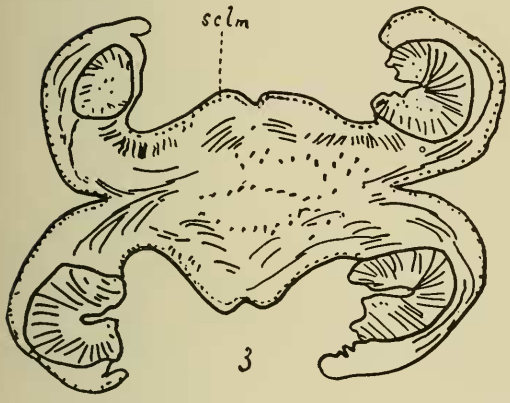
Fig. 2.—Side view, showing apical depression, also lateral groove between the suckers.

anteriorly. (Figs. 1, 2.) The suckers are so placed that they face forwards and at times slightly inwards. As the apical region is quite small and scarcely, if at all, projects beyond the suckers, the front of the scolex is rather flat and rectangular, reminding one of the appearance of the scolex of *O. punica* Cholodk. (La Rue 1914, pl. 13, fig. 153.) The suckers are prominent, strongly muscular, slightly petiolate organs, and, as already stated, their cavities are directed anteriorly. There is a well-marked furrow between the suckers dorsally, laterally and ventrally, the dorsal and ventral grooves being longer than the lateral furrows, the former two terminating in the anterior neck region, while the

latter disappear just behind the level of the base of the suckers. Each sucker has a diameter of about ·35 to ·4 mm., and possesses a deep concavity. An apical sucker is absent, though a slight terminal depression can be seen on the scolex (fig. 2), and into it are inserted a few weak muscle fibres. The cuticle of the scolex is smooth and thin, though somewhat thicker on the suckers than on the rest of the scolex.

The neck region is about ·7 mm. in its narrowest part, the strobila gradually widening, until mature segments reach a breadth of about 1·4 mm. and a length of about 2 mm. The proglottids are rectangular, being at first broader than long but later become squarish and ultimately longer than broad. Segmentation is not readily visible, the parasite having the appearance of a thin, narrow piece of tape. Genital pores alternate irregularly and there is no definite genital papilla.

The cuticle of the strobila is very thin and practically smooth. The subcuticula possesses very closely set and well-developed longitudinal muscle



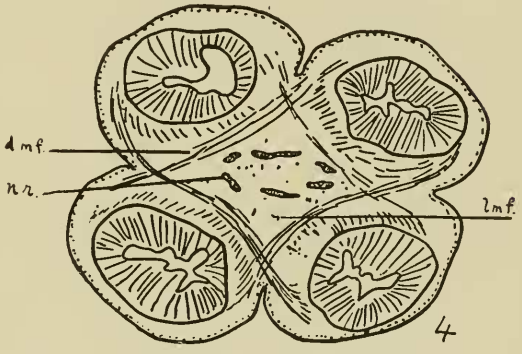


Fig. 3.—Transverse section of the anterior end of the scolex, showing subcuticular longitudinal muscles (*s.c.l.m.*), also the musculature of the parenchyma and suckers.

Fig. 4.—Section through scolex in vicinity of nerve-ring (*n.r.*), showing diagonal muscle fibres (*d.m.f.*).

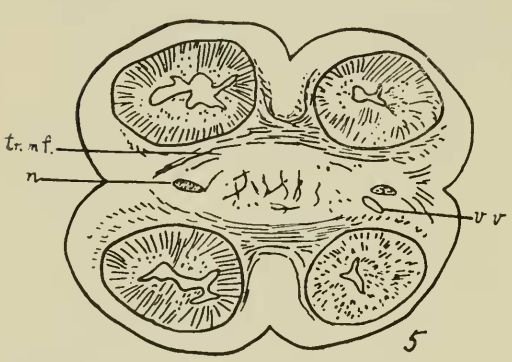
bundles arranged in a series next to the cuticle and occupying a zone of about ·04 mm. in width (figs. 9, 17). The cortex contains numerous calcareous corpuscles, varying in size from ·15 to ·08 mm. in long diameter by ·08 to ·04 mm. in short diameter, and averaging about ·06 by ·04 mm. (Fig. 9.)

Muscular System.—The main musculature lies inwardly from the zone containing the calcareous bodies. The longitudinal muscles are well developed especially in the scolex and neck, while the transverse fibres are very weak and often not recognisable, nor are the dorsoventral fibres well marked.

The longitudinal musculature of the segments forms a well-defined ring consisting of numerous small bundles arranged more or less in a single series, though not infrequently isolated bundles lie inwardly from this ring (text-figs. 13, 17), and in places the arrangement is such that there appears to be an inner and an outer series (fig. 17).

A powerful sphincter surrounds the common genital atrium (figs. 11, 14).

The musculature of the neck and scolex calls for notice. In the anterior neck region, the longitudinal muscles are very abundant and are seen, in transverse section, to be cut transversely as well as obliquely (text-fig. 8), as they pass forwards to become inserted into various parts of the scolex. There is a well-defined zone containing the muscles (text-fig. 7), and this lies just within the region provided with calcareous corpuscles. It occupies the whole central region, though the fibres are rather less abundant in the centre of the section and in the immediate vicinity of the nerves and excretory vessels. The bundles



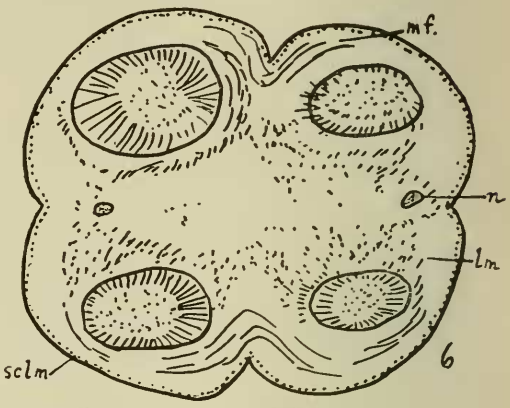
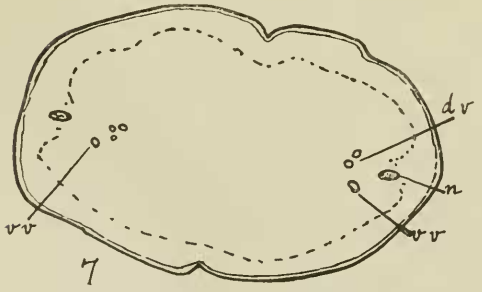


Fig. 5.—T.S. posterior region of scolex, showing transverse muscle fibres (*tr.m.f.*). *v.v.* = ventral excretory canal.

Fig. 6.—T.S. behind fig. 5, showing disposition of the longitudinal muscles (*l.m.*), also the presence of weak transverse fibres (*m.f.*) in the cortex dorsally and ventrally.

elsewhere are strongly developed and very numerous, so that there is practically no differentiation into medulla and cortex within the muscular zone, though the outer cortical area is well defined since it is free from muscular fibres and contains calcareous corpuscles. In this region certain of the excretory canals (the dorsal) have their walls well supplied with longitudinal muscle fibres (fig. 9). There is no definite arrangement of the muscles in the neck region.



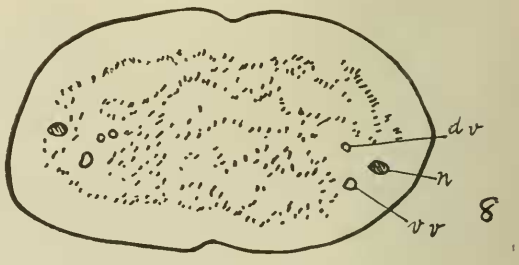


Fig. 7.—T.S. neck, showing two dorsal excretory canals (*d.v.*) on one side and three on the other. The outer limit of the longitudinal musculature is shown by the dotted line. *v.v.* = ventral excretory vessels.

Fig. 8.—T.S. neck posteriorly to Fig. 7, showing arrangement of the excretory vessels and muscles. There are two dorsal canals on one side and one on the other.

In transverse sections of the anterior end of the scolex, the musculature is seen cut transversely and obliquely. Some of the fibres are inserted into the apical region of the rostellum and diverge as they pass posteriorly, appearing in the central region of the rostellum (fig. 3). Outwardly from these are more or less transverse fibres which are inserted into the base of the suckers, and just behind this area they become rather diagonally arranged as shown in fig. 4. Lying internally from these are relatively few longitudinal fibres and the nerve-ring. Just posteriorly, the arrangement of the musculature is as shown in fig. 5, the obliquely transverse series now becoming a well-developed band of transverse fibres situated dorsally and ventrally, each band connecting the inner and lower portions of the two suckers of the respective surfaces. The arrangement and position of these bands is such as to suggest that their contraction may cause the outer parts of the suckers to move away from each other. Some of the oblique fibres are still seen in the section (fig. 5). Within the transverse bands are the longitudinal musculature as well as less strongly developed fibres arranged irregularly and traversing the medulla.

At about the level of the base of the suckers (fig. 6) the longitudinal series becomes much more evident, and can be seen aggregated particularly around the inner margins of the suckers. Fibres also lie scattered in the medulla, and there are weak ring-fibres situated outwardly from the sucker region in the loose cortex below the subcuticula.

Nervous System.—The nerve-ring (fig. 4) lies between the suckers at about the level of the base of their concavities. In the neck and strobila the longitudinal nerve of each side lies dorsolaterally to the main excretory canal and apparently dorsally to the sex-ducts.

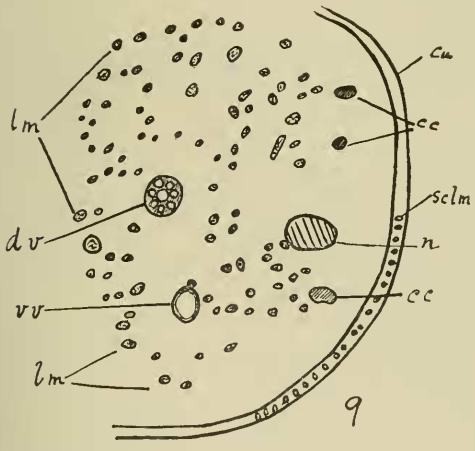


Fig. 9.—Portion of a transverse section in the vicinity of that shown in fig. 8, showing detailed structure of cortex and excretory vessels. Lettering as in previous figures—*c.c.*, calcareous corpuscles ; *cu.*, cuticle.

Excretory System.—The state of preservation of the specimens does not allow of the tracing of the excretory system forwards beyond the anterior part of the neck, with any certainty. The ventral vessel apparently forms a loop just behind and outwardly from the nerve-ring. The dorsal canals do not extend into the proglottids but can be recognised in sections of the neck (figs 7, 8, 9), and their walls, as already stated, are provided with a ring of strong muscular fibres like those of the rest of the scolex and neck. The ventral vessel of each side has a much wider lumen and possesses thin walls. In the specimen sectioned, the dorsal canals show the following arrangement in the scolex and neck. On the right side in the posterior part of the scolex there are three excretory ducts, but only two on the other (fig. 7). Two of each side eventually fuse in the neck so that there come to be, in addition to the ventral canal, one dorsal vessel on the left side and two on the right (fig. 8). This

arrangement continues for a little distance, the single dorsal canal of the left side dividing to form two but these eventually rejoin so that there are two and one of these canals respectively, as before. Their further arrangement was not traced in the series, but in sections of segments no sign of any dorsal vessels was recognised. The ventral duct of each side is rather large, and is situated ventrally to the vitelline region. It passes below the outer ends of the sex-duets.

Male Reproductive System.—The testes are very numerous and are restricted to two wide lateral fields between the uterus and the vitelline follicles, and extending from the anterior border of the ovary almost to the anterior end of the segment. They are absent above the cirrus sac and *vas deferens*, which occupy practically the whole of the medulla in that region. The testes lie rather

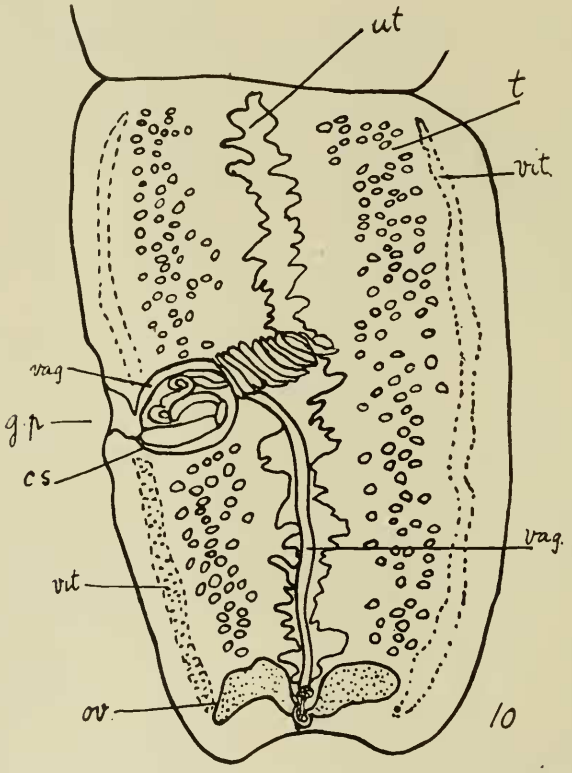


Fig. 10.—A mature segment. *c.s.*, cirrus sac ; *g.p.*, genital pore ; *ov.*, ovary ; *t.*, testes ; *ut.*, uterus ; *vag.*, vagina ; *vit.*, zone occupied by the vitelline follicles.

nearer the dorsal surface of the medulla and are arranged as in fig. 10. In surface view the vesicles are seen to be slightly elongate with the long axis transverse to the segment. Their dorsoventral diameter is between ·055 and ·06 mm. while in surface view they measure about ·03 to ·05 mm. by ·02 to ·03 mm.

The *vas deferens* is a large and very much coiled tube situated just inwardly from the cirrus sac and overlying both the uterus and vagina.

The cirrus sac, a large irregularly rounded organ, lies laterally near the middle of the pore-bearing margin of the proglottis. It measures about ·38 mm. in length and ·28 mm. in maximum breadth. Within it lies the long, coiled

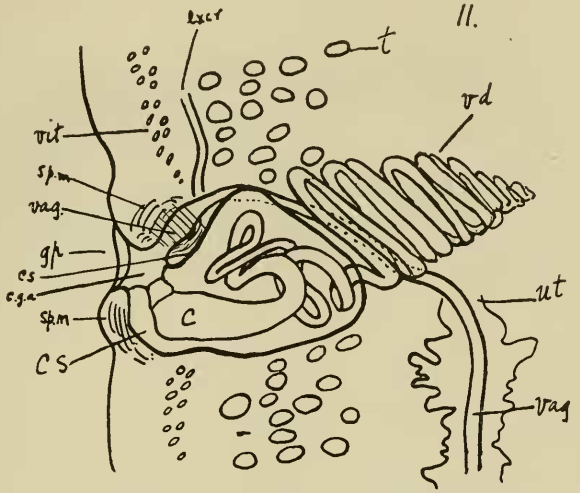


Fig. 11.—Portion of segment. *c.*, cirrus ; *c.g.a.*, genital atrium ; *c.s.*, cirrus sac ; *excr.*, ventral excretory canal ; *g.p.*, genital pore ; *sp.m.*, sphincter muscle around genital atrium and outer portion of vagina ; *v.d.*, vas deferens. Other lettering as in previous figures.

ejaculatory duct whose outer end is widened to constitute the cirrus. The latter when introverted has a length of about ·25 mm. and a breadth of ·07 mm. Spines were not observed on it. The organ does not appear to be very muscular.

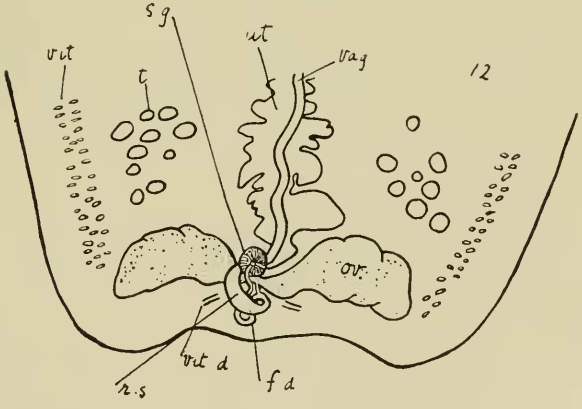


Fig. 12.—Showing details of female system, &c. *f.d.*, fertilising duct ; *r.s.*, receptaculum seminis ; *s.g.*, shell-gland ; *vit.d.*, vitelline duct. The short oviduct is also shown.

The male aperture opens into the genital atrium usually behind, but above the level of, the female pore. The terminal portion of the male apparatus is directed anterolaterally.

The atrium is surrounded by a well-marked sphincter, especially in the region of the female pore (fig. 14). There is only a slight genital papilla present at sexual maturity. It lies near the middle of the segment, and, as already mentioned, alternates irregularly.

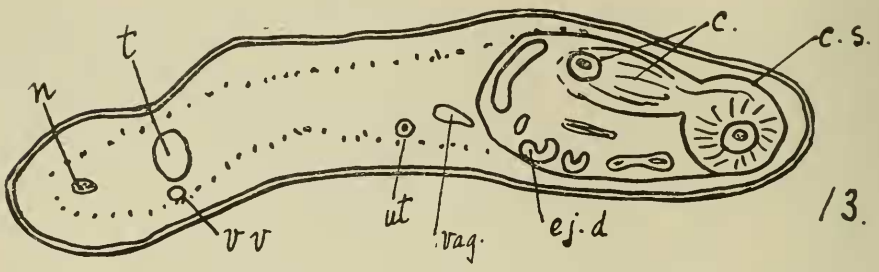


Fig. 13.—Transverse section of segment in region of cirrus sac (*c.s.*), showing ejaculatory duct (*ej.d.*) and cirrus (*c.*) cut across.

Female System.—The ovary is a fairly large, compact organ consisting of two pyriform lobes connected by a narrow ovarian bridge which lies more ventrally and rather more posteriorly than the rest of the gland. From the bridge there is given off a short, fairly wide oviduct provided with a " swallowing apparatus" (fig. 18).

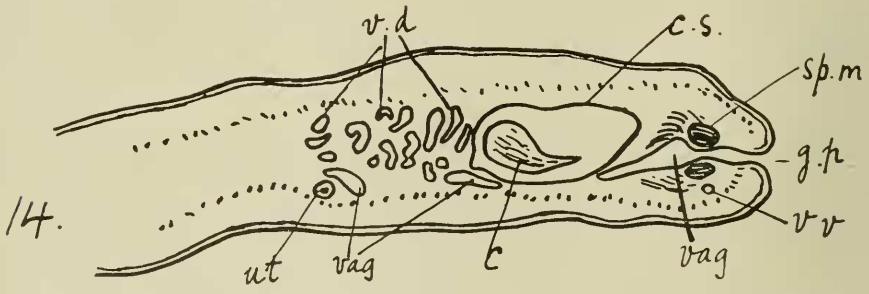


Fig. 14.—T.S., showing vagina opening into the genital atrium, also the sphincter muscle (*sp.m.*) surrounding the vagina ; *v.d.*, vas deferens. Other lettering as in preceding figures.

The vagina leads from the female pore which generally lies in front of, and ventrally to, the male aperture (fig. 11) but occasionally postero-ventrally. It is a rather wide tube which travels inwards ventrally or antero-ventrally to the cirrus sac very close to the ventral layer of longitudinal muscle and just above the excretory canal. It then curves backwardly behind and below the inner end of the cirrus sac, and below the coils of the *vas deferens*, becoming slightly narrowed as it passes inwards, its level gradually rising until it comes to be just above the uterus (figs. 13-15, 17). Its course is then practically

straight until it approaches the ovary when it becomes slightly sinuous and its lumen widened to constitute a *receptaculum seminis*. It passes between the ovarian bridge and the shell-gland. It forms a loop and is joined by the oviduct.

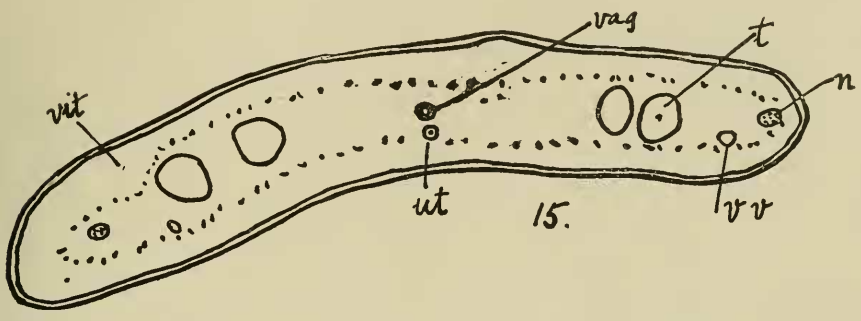


Fig. 15.—T.S. across posterior half of a segment.

The fertilising duct passes back below the vagina as a narrow tube and then travels forwards and upwards to penetrate the shell-gland. The point of entry of the vitelline ducts was not observed (figs. 16, 18).

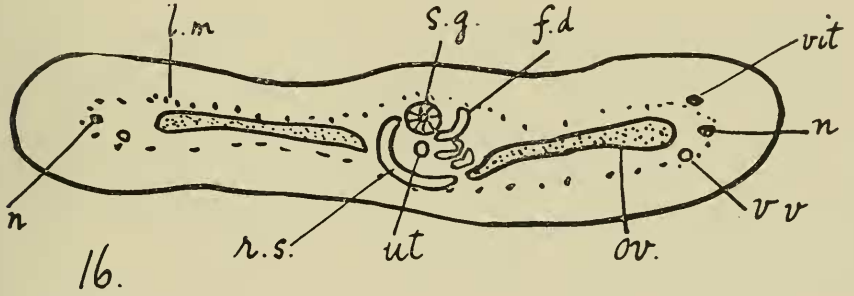


Fig. 16.—T.S. across female complex. Lettering as in preceding figures.

The uterus is at first a narrow canal but its walls soon become thrown into irregular sac-like folds. The organ lies in the ventral part of the medulla just above the ventral layer of longitudinal muscle, but below the vagina and *vas deferens*. It extends almost to the anterior end of the segment. Whilst immature the uterine walls are relatively thick when compared with the vagina (fig. 17). Uterine pores were not observed. Uteri with ripe eggs were found to be restricted to the inner zone of the proglottids.

The vitelline follicles are small, very numerous glands, occupying a restricted zone laterally to the testes, and extending along practically the whole length of the segment.

Ripe eggs possess apparently two shells and measure about ·025 mm. in diameter, the oncosphere being about ·012 mm. in diameter.

O. longmani is the first species of this genus to be described from an Australian reptile. Type specimens have been deposited in the collection of the Queensland National Museum.

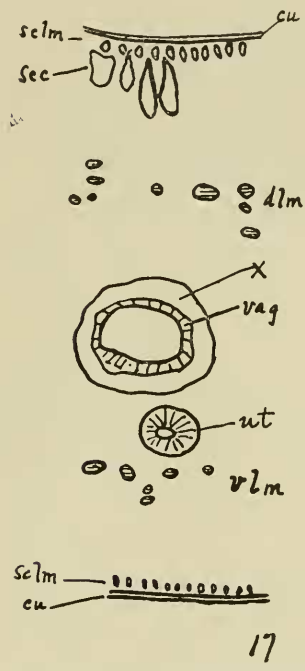


Fig. 17.—A more highly magnified view of the midregion of section figured in fig. 15. *s.c.c.*, subcuticular cells ; *d.l.m.*, *v.l.m.*, dorsal and ventral longitudinal muscles ; *x.*, modified parenchyma surrounding vagina. Note the difference in thickness of the walls of the uterus and vagina.

Beddard's *Ophidotænia* (1913*a*, p. 35; 1913*c*, p. 259) is a synonym of La Rue's *Ophiotænia* (1913, 1914). Dr. Beddard lays stress upon the presence of uterine pores ventrally. La Rue (1913, p. 481), however, has mentioned that these may or may not be present in species of *Ophiotænia*, and he has figured such openings in his *O. grandis* (1914, pl. 9, fig. 101).

If the possession of uterine pores be regarded as having generic importance then La Rue's genus might be divided, his name being retained for species in which the ventral outgrowths of the uterus do not reach the surface whilst forms like *O. grandis* would be transferred to Beddard's *Ophidotænia*. It seem advisable to retain both groups of species under La Rue's *Ophiotænia*.*

CŒNURUS SERIALIS, Gerv.

This larval parasite was taken by me in October, 1910, from a Coypu rat, *Myopotamus coypus*, which had died in the Sydney Zoological Gardens. The specimens were found in the musculature adjacent to the ribs. *C. serialis*, or better *Multiceps serialis*, has already been reported on a few occasions from this host (*see* Hall, 1910, p. 61) in America. It is not uncommonly met with in rabbits in Victoria (Sweet, 1909, p. 507) and New South Wales (Johnston, 1910, p. 343), where it sometimes occasions serious injury. In one instance, a rabbit was found by Dr. Cleland and myself, whose left eye had been completely destroyed by the development of a large cyst of this parasite in the connective tissue in the socket of the eye, the organ having become compressed and greatly flattened between the cyst and the orbit.

NEMATOTÆNIA, sp.

A few tiny cestodes collected by Dr. S. J. Johnston, of Sydney University, from New South Wales frogs, have been determined as belonging to this genus. They resemble *N. dispar* in general anatomy (Luhe, 1910, p. 124), but are quite small, the largest measuring 6 to 7 mm. in length and about ·2 mm. in maximum width.

The species was taken from the duodenum of one specimen of *Hyla freycineti* and from the intestine of two *Hyperoleia marmorata*, while fragments

* Beddard (1913*b*, p. 157) has figured rudimentary uterine pores in *Ichthyotænia gabonica* Bedd. (= *Ophiotænia gabonica*) and (1913*c*, p. 255) in *Solenotænia viperis* Bedd.

were collected from the rectum of *Hyla cærulea.* All these frogs were captured in the Sydney district, and a record of the finding of cestodes in them was made by Dr. S. J. Johnston (1912, pp. 290, 291).

A detailed account of this new species is reserved for a future communication, but as the genus is so far known only from a few amphibia from North America, and from the Mediterranean coasts and Central Europe, the record of its occurrence, though apparently rare, in Eastern Australia is important.

The only adult cestode so far described from Australian Amphibia is *Ophiotænia hylæ* Johnston (1912, p. 64), from the golden frog, *Hyla aurca,* from New South Wales.

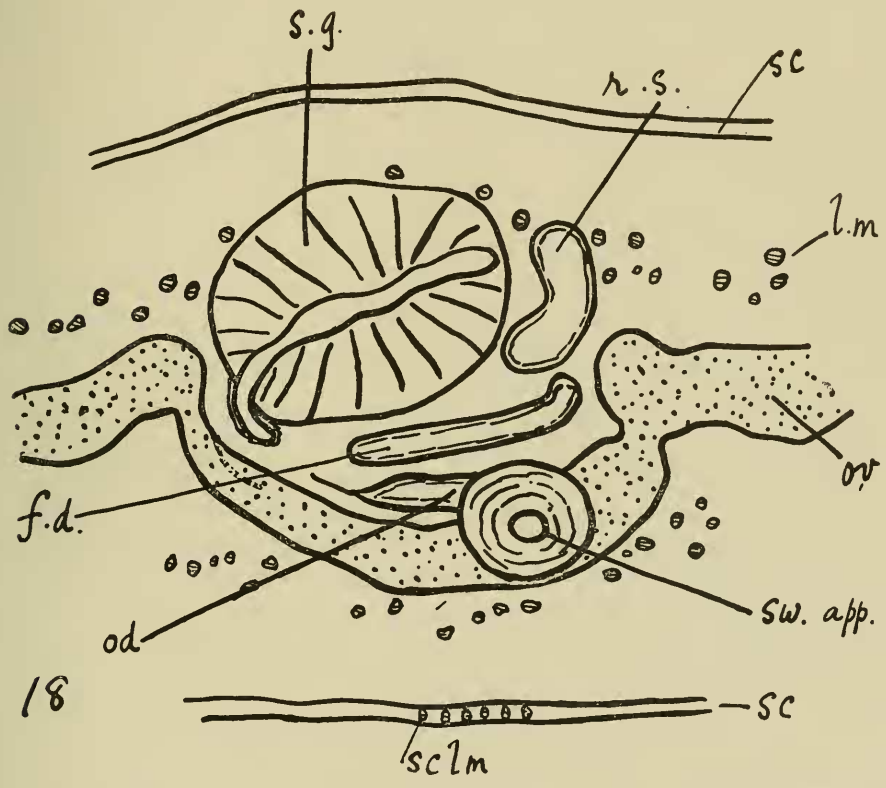


Fig. 18.—A more highly magnified view of a section across the female complex, showing swallowing apparatus (*sw. app.*), shell-gland (*s.g.*), receptaculum seminis (*r.s.*), ovary (*ov.*), and fertilising duct or perhaps uterine tube.

SPARGANUM, sp.

The Director of this Museum forwarded to me specimens of a larval cestode taken by Mr. H. A. Longman from the subcutaneous tissues of a frilled lizard, *Chlamydosaurus kingii,* caught near Brisbane. They belong to the same species as those recorded by me (Johnston, 1914, p. 110) from this lizard from North Queensland.

DENDROUTERINA, Fuhrmann.

This genus was erected by Fuhrmann (1912, p. 7) to receive a parasite, *D. herodiæ* Fuhrm., from an African heron, *Herodias garzetta*. A comparison of his figures and description with those of *Bancroftiella tenuis* Johnston (1911, p. 50), *B. glandularis* (Fuhrm.) (Johnston, 1913, p. 84), and *B. ardeæ* Johnston (1913, p. 85), leads one to the conclusion that *Dendrouterina* and *Bancroftiella* are congeneric. The former name becomes a synonym of the latter, and the parasite may be designated *B. herodiæ* (Fuhrm.).

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